Exercise-I (Conceptual Questions) Build Up Your Understanding

GENETIC MATERIAL, DNA

1. In eukaryotic cell circular and double stranded DNA occurs in :-
(1) Golgibody
(2) Mitochondria
(3) Nucleus
(4) Ribosome

2. Double helix model of DNA which was proposed by Watson and Crick was of:-
(1) C-DNA (2) B-DNA
(3) D-DNA (4) Z-DNA

3. If there are 10,000 nitrogenous base pairs in a DNA then how many nucleotides are there:
(1) 500 (2) 10,000
(3) 20,000 (4) 40,000

4. Double helix model of DNA was proposed by :
(1) Watson and Crick
(2) Schleiden schwann
(3) Singer and Nicholson
(4) Kornberg and Khurana

5. Back bone in structure of DNA molecule is made up of :-
(1) Pentose Sugar and phosphate
(2) Hexose sugar and phosphate
(3) Purine and pyrimidine
(4) Sugar and phosphate

6. Substance common in DNA and RNA :-
(1) Hexose Sugar
(2) Histamine
(3) Thymine
(4) Phosphate groups

7. Nucleotide is :-
(1) N_2 - base, pentose sugar and phosphoric acid
(2) Nitrogen, Hexose sugar and phosphoric acid
(3) Nitrogen base, pentose sugar
(4) Nitrogen base, trioses and phosphoric acid

8. Unit of nucleic acids are:-
(1) Phosphoric acid
(2) Nitrogenous bases
(3) Pentose Sugar
(4) Nucleotides

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9. Which element is not found in nitrogenous base ?
(1) Nitrogen (2) Hydrogen
(3) Carbon (4) Phosphorus

10. DNA was first discovered by:-
(1) Meischer (2) Robert Brown
(3) Flemming (4) Watson & Crick

11. Nucleic acid (DNA) is not found in:-
(1) Nucleus & nucleolus
(2) Peroxysome & ribosome
(3) Mitochondria & plastid
(4) Chloroplast & nucleosome

12. DNA is not present in :-
(1) Mitochondria (2) Chloroplast
(3) Bacteriophage (4) TMV

13. A nucleic acid contains thymine or methylated uracil then it should be :-
(1) DNA (2) RNA
(3) Either DNA or RNA (4) RNA of bacteria

14. Prokaryotic genetic system contains :-
(1) DNA & histones
(2) RNA & histones
(3) Either DNA or histones
(4) DNA but no histones

15. A N_2 - base together with pentose sugar and phosphate forms (or) building - block unit of nucleic acid is :-
(1) Nucleoside (2) Polypeptide
(3) Nucleotide (4) Amino acid

16. Which of the following is not a pyrimidine N_2 base ?
(1) Thymine (2) Cytosine
(3) Guanine (4) Uracil

17. The purine & pyrimidine pairs of complementary strands of DNA are held together by :–
(1) H - bonds (2) O - bonds
(3) C - bonds (4) N - bonds

18. Number of H - bonds between guanine and cytosine are :-
(1) One (2) Two
(3) Three (4) Four

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19. Which purine & pyrimidine bases are paired together by H - bonds in DNA ?
(1) AC & GT (2) GC & AT
(3) GA & TC (4) None of the above

20. A single stranded DNA is present in:-
(1) TMV (2) Salmonella
(3) ϕ x 174 (4) Bacteria

21. What is the nature of the 2 strands of a DNA duplex ?
(1) Identical & Complimentary
(2) Antiparallel & complimentary
(3) Dissimilar & non complimentary
(4) Antiparallel & non complimentary

22. On an average, how many purine N_2 bases are present in single coil of DNA :-
(1) Four (2) Five
(3) Ten (4) Uncertain

23. Distance between two nucleotide pairs of DNA is :-
(1) 0.34 nm (2) 34 Å
(3) 3.4 μ (4) 34 nm

24. In a double strand DNA amount of Guanine is 35% then what will be the amount of cytosine:-
(1) 70% (2) 15% (3) 30% (4) 35%

25. Chargaaf 's rule is given as :-
(1) Purines $\neq$ Pyrimidines
(2) A + G = T+ C
(3) A+ U = G + C
(4) A + T / G + C = Const.

26. In RNA , Nucleotides are bonded by :-
(1) H - bonds
(2) Phospo diester bonds
(3) Ionic bonds
(4) Salt linkage

27. A nucleoside differs from a nucleotide is not having :-
(1) Phosphate
(2) Sugar
(3) Phosphate & sugar
(4) Nitrogen base

28. Wilkins X-ray diffraction showed the diameter of the DNA helix is :-
(1) 10 Å (2) 20 Å
(3) 30 Å (4) 40 Å

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29. In the DNA of an animal percentage of Adenine is 30 then percentage of Guanine will be :-
(1) 40 (2) 30
(3) 20 (4) 70

30. Length of one loop of B- DNA:-
(1) 3.4 nm. (2) 0.34 nm.
(3) 20 nm. (4) 10 nm.

31. If base order in one chain of DNA is "ATCGA" then how many no. of H–bond found in DNA duplex :–
(1) 20 (2) 12 (3) 10 (4) 11

32. In DNA purine nitrogen bases are :-
(1) Uracil and Guanine
(2) Guanine and Adenine
(3) Adenine and cytosine
(4) None

33. Two free ribonucleotide units are interlinked with :-
(1) Peptide bond
(2) Disulphide bond
(3) Hydrogen bond
(4) Phosphodiester bond

34. Short DNA segment has 80 thymine and 90 guanine bases. The total number of nucleotides are :-
(1) 160 (2) 40
(3) 80 (4) 340

35. Prokaryotic DNA is :-
(1) double stranded circular
(2) single stranded circular
(3) double stranded linear
(4) double stranded RNA as nucleic acid

36. Nucleoside is :-
(1) Polymer of nucleic acid
(2) Phosphoric acid + base
(3) Phosphoric acid + sugar + base
(4) Sugar + base

37. The back bone of RNA is consists of which of the following sugar ?
(1) Deoxyribose (2) Ribose
(3) Sucrose (4) Maltose

38. In a nucleotide H_3PO_4 binds to which carbon atom of pentose sugar?
(1) Only 1st carbon
(2) Only 3rd carbon
(3) Only 5th carbon
(4) Both 3rd and 5th carbon

39. DNA is acidic due to:-
(1) Sugar
(2) Phosphoric acid
(3) Purine
(4) Pyrimidine

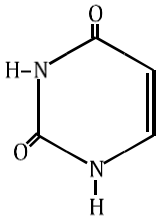
40. RNA contains which of the following base, in place of Thymine of DNA ?
(1) Thymine (2) Uracil
(3) Adenine (4) None of these

41. Genetic information are transferred from nucleus to cytoplasm of cell through :-
(1) DNA (2) RNA
(3) Lysosomes (4) ACTH

42. If one strand of double stranded DNA, consists of the sequence 3'–ATTCGTAC–5', then the complementary sequence must be:–
(1) 5'–UAAGCAUG–3'
(2) 3'–TAAGCATG–5'
(3) 5'–TAAGCATG–3'
(4) 5'–TAAGCATG–3' in the reverse direction

43. DNA molecule has uniform diameter due to:-
(1) Double stranded
(2) Presence of phosphate
(3) Specific base pairing between purine and pyrimidine
(4) Specific base pairing between purine and purine

44. Following structure is related to which compound?



(1) Adenine (2) Guanine
(3) Uracil (4) Thymine

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45. If the sequence of bases in one strand of DNA is known then the sequence in other strand can be predicted on the basis of: –
(1) Antiparallel (2) Complementary
(3) Polarity (4) Coiling

46. The unequivocal proof that DNA is the genetic material came from the experiments of :–
(1) Hershey and Chaese (1952)
(2) Frederik Griffith (1928)
(3) Watson and Crick
(4) Meselson and Stal (1958)

DNA REPLICATION

47. In process of replication deoxyribonucleoside triphosphate:-
(1) acting as substrate
(2) providing energy for polymerisation reaction
(3) acting as an enzyme
(4) both (1) and (2)

48. DNA Replication occurs at :-
(1) G_0 & G_1 (2) G_2 - stage
(3) S – Stage (4) Mitotic phase

49. A DNA molecule in which both strands have radioactive thymidine is allowed to duplicate in an environment containing non-radioactive thymidine. What will be the exact number of DNA molecules that contains the radio active thymidine after 3 duplications ?
(1) One (2) Two
(3) Four (4) Eight

50. A bacterium with completely radioactive DNA was allowed to replicate in a non- radioactive medium for two generation what % of the bacteria should contain radioactive DNA ?
(1) 100 % (2) 50 %
(3) 25 % (4) 12.5 %

51. In the base sequence of one strand of DNA is GAT, TAG, CAT, GAC what shall be the sequence of its complementary strand?
(1) CAT, CTG, ATC, GTA
(2) GTA, ATC, CTG, GTA
(3) ATC, GTA, CTG, GTA
(4) CTA, ATC, GTA, CTG

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52. Method of DNA replication in which two strands of DNA separates and synthesize new strands?
(1) Dispersive
(2) Conservative
(3) Semiconservative
(4) Non conservative

53. During replication of a bacterial chromosome DNA synthesis starts from a replication origin site and :-
(1) RNA primers are not involved
(2) is facilitated by telomerase
(3) moves in one direction of the site
(4) moves in bi-directional way

54. The nature of DNA replication is :-
(1) Conservation
(2) Non conservative
(3) Semi-conservative
(4) Cyanobacteria

55. The direction of DNA replication is :-
(1) From 5' end towards 3' end
(2) From 3' end towards 5' end
(3) Amino terminus to carboxy terminus
(4) Carboxy terminus to amino terminus

56. Semiconservation replication of DNA was proposed by :-
(1) Watson and Crick
(2) Bateson and Punnett
(3) Messelson and Stahl
(4) Avery, McCarty and Mactleod

57. Which of the following enzyme is used in DNA multiplication ?
(1) RNA polymerase
(2) DNA endonuclease
(3) Exonuclease
(4) DNA Polymerase

58. Mode of DNA replication in E. coli is :-
(1) Conservative and unidirectional
(2) Semi conservative and unidirectional
(3) conservative and bidirectional
(4) Semi conservative and bidirectional

59. Which of the following enzyme is used to join DNA fragments?
(1) Terminase (2) Endonuclease
(3) Ligase (4) DNA polymerase

60. Okazaki fragments are synthesised on :-
(1) Leading strands of DNA only
(2) Lagging strands of DNA only
(3) Both leading and lagging strands of DNA
(4) Complementary DNA

61. DNA replication includes :-
(1) DNA ligase
(2) DNA polymerase and ligase
(3) RNA polymerase and ligase
(4) All of these

62. In DNA replication, the primer is :-
(1) A small deoxyribonucleotide polymer
(2) A small ribonucleotide polymer
(3) Helix destabilizing protein
(4) Enzyme taking part in joining nucleotides of new strand

63. The strand of DNA, which does not code for anything is referred to as :-
(1) Template strand
(2) Antisense strand
(3) Coding strand
(4) Noncoding strand

64. During DNA replication discontinuously synthesized fragments are later joined by the enzyme :–
(1) Ligase (2) DNA polymerage
(3) RNA primer (4) Primase

65. Replication fork is :–
(1) Large opening of the DNA helix
(2) Small opening of the DNA helix
(3) Tightly coiled part of DNA helix
(4) Loosely coiled part of DNA helix

66. The DNA dependent DNA polymerase catalyse polymerisation in:–
(1) 3' $\rightarrow$ 5' direction
(2) 5' $\rightarrow$ 3' direction
(3) Depend on the nature of template strand
(4) both (1) and (2)

67. Main enzyme of DNA replication is :–
(1) DNA dependent RNA polymerase
(2) DNA dependent DNA polymerase
(3) RNA dependent RNA polymerase
(4) RNA dependent DNA polymerase

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RNA, TRANSCRIPTION

68. The Process of copying genetic information from one strand of DNA into Y is termed as Z

	Y	Z
(1)	Transcription	RNA
(2)	RNA	Transcription
(3)	DNA	Translation
(4)	Replication	RNA

69. Code in RNA corresponding to AGCT in DNA:-
(1) TACA (2) UCGA
(3) TCGA (4) AGUC

70. Which of the following is called adaptor molecule?
(1) DNA (2) m-RNA
(3) t-RNA (4) RNA

71. Which may be attached with Adenine base in RNA ?
(1) Guanine (2) Cytosine
(3) Uracil (4) Thymine

72. In the base sequence of one strand of DNA is CAT, TAG , CAT , CAT, GAC what would be the base sequence of its complementary m-RNA?
(1) GUA, GUA, CUG, AUC, CUG
(2) AUG, CUG, CUC, GUA, CUG
(3) GUA, AUC, GUA, GUA, CUG
(4) GUC, CUG, CUG, CUA, CUU

73. The process by which DNA of the nucleus passes genetic information to m-RNA is called?
(1) Transcription (2) Translocation
(3) Translation (4) Transportation

74. A sequence of three consecutive bases in a t-RNA molecule which specifically binds to a complementary codon sequence in m RNA is known as ?
(1) Triplet
(2) Non - sense codon
(3) Anti codon
(4) Termination codon

75. t-RNA attach to larger subunit of ribosomes with the help of which loop :-
(1) DHU – loop (2) T ψ C loop
(3) Anticodon loop (4) Minor loop

76. In three dimensional view the molecule of t-RNA is:-
(1) L-shaped (2) S-shaped
(3) Y- shaped (4) E-shaped

77. During transcription, the DNA site at which RNA polymerase binds is called ?
(1) Promoter (2) Regulator
(3) Receptor (4) Enhancer

78. During transcription, if the nucleotide sequence of the DNA strand that is being coded is ATACG, then the nucleotide sequence in the mRNA would be:-
(1) TATGC (2) TCTGG
(3) UAUGC (4) UATGC

79. Which form of RNA has a structure resembling clover leaf ?
(1) rRNA (2) hnRNA
(3) mRNA (4) tRNA

80. Which one of the following makes use of RNA as a template to synthesize DNA ?
(1) DNA dependant RNA polymerase
(2) DNA polymerase
(3) Reverse transcriptase
(4) RNA polymerase

81. The enzyme responsible for transcription is :-
(1) D.N.A polymerase-I
(2) R.N.A. polymerase
(3) Reverse transcriptase
(4) D.NA. polymerase-III

82. If the base sequence in DNA is 5' AAAA 3' then the bases sequence in m-RNA is :-
(1) 5' UUUU 3' (2) 3' UUUU 5'
(3) 5' AAAA 3' (4) 3' TTTT 5'

83. Correct order of molecular weight is :-
(1) DNA < r-RNA < t-RNA
(2) DNA < m-RNA < r-RNA
(3) t-RNA < m-RNA < DNA
(4) t-RNA < DNA < m-RNA

84. The genes are responsible for growth and differentiation in an organism through regulation of :-
(1) Translocation
(2) Transformation
(3) Transduction and translation
(4) Translation and transcription

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85. Method by which information reaches from DNA to RNA is ?
(1) Transcription (2) Translation
(3) Transformation (4) Transduction

86. DNA acts as a template for synthesis of :-
(1) RNA (2) DNA
(3) Both '1' and '2' (4) Protein

87. Which is soluble RNA :-
(1) hnRNA (2) rRNA
(3) mRNA (4) tRNA

88. Portion of gene which is transcribed but not translated is ?
(1) exon (2) intron
(3) cistron (4) codon

89. The smallest RNA is :-
(1) r-RNA (2) m-RNA
(3) t-RNA (4) nuclear RNA

90. The most abundant RNA of cell is :-
(1) r-RNA (2) t-RNA
(3) m-RNA (4) None of these

91. One strand of DNA (non template) has base sequence CAG, TCG, GAT. What will be the sequence of bases in m-RNA ?
(1) AGC, CTA, CTA (2) GTC, AGC, CTC
(3) CAG. UCG. GAU (4) GAC. TAG. CTA

92. Reverse transcription was discovered by :-
(1) Watson and Crick
(2) Khorana
(3) Temin an Baltimore
(4) Meischer

93. Mature eukaryotic m–RNA is recognised by:-
(1) Shine dalgarno sequence at 5′end
(2) 7–methyl guanosine at 5′ end and polyadenine bases at 3′end
(3) Anti shine dalgarno sequence at 5′end
(4) Presence of coding and noncoding sequence

94. Transcription unit in DNA is composed of :-
(1) Promoter (2) Structural gene
(3) Terminator (4) All

95. In DNA promoter is the site for the initiation of :-
(1) Replication (2) Translation
(3) Transcription (4) Both (2) and (3)

96. Main enzyme of transcription:–
(1) DNA dependent DNA polymerase
(2) DNA dependent RNA polymerase
(3) RNA dependent RNA polymerase
(4) RNA dependent DNA polymerase

97. Removal of introns and joining of exons is called :-
(1) Capping (2) Tailing
(3) Splicing (4) All

GENETIC CODE, TRANSLATION

98. A codon in m-RNA has :-
(1) 3-bases
(2) 2-bases
(3) 1-base
(4) Number of bases vary

99. A DNA strand is directly involved in the synthesis of all the following except: -
(1) Another DNA (2) t-RNA & m-RNA
(3) r-RNA (4) Protein

100. Genetic code was discovered by:-
(1) Nirenberg & Mathei
(2) Kornberg & Crick
(3) Khorana & Kornberg
(4) Gamow

101. Genetic code was deciphered by enzymatically synthesizing the trinucleotides by:-
(1) Watson & Crick (2) Beadle & Tatum
(3) Briggs & King (4) M.W. Nirenberg

102. Nirenberg synthesized an m-RNA containing 34 poly-Adenine (A-A-A-A-A-A--) and found a polypeptide formed of 11 poly-lysine this proved that genetic code for lysine was :-
(1) one-adenine (2) A-A doublet
(3) A-A-A triplet (4) Many adenines

103. 64 Codons constitute genetic code because:-
(1) There was 64 types of amino acid
(2) 64 types of t-RNA
(3) Genetic code is triplet
(4) There are 64 enzymes

104. Which codon gives signal for the start of polypeptide (protein) chain synthesis:-
(1) AUG (2) UGA
(3) GUA (4) UAG

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105. The function of non-sense codons is:-
(1) To release polypeptide chain from m-RNA
(2) To form an unspecified amino acid
(3) To terminate the message of a gene-controlled protein synthesis-
(4) To convert a sense DNA into non-sense DNA

106. Termination of chain growth in protein synthesis is brought about by:-
(1) UUG, UGC, UCA (2) UCG, GCG, ACC
(3) UAA, UAG, UGA (4) UUG, UAG, UCG

107. Genetic code determines: -
(1) Structural pattern of an organism
(2) Sequence of amino acids in protein chain
(3) Variation in offsprings
(4) Constancy of morphological trait

108. m - RNA is attached with :-
(1) E.R. (2) Ribosome
(3) Nucleus (4) Lysosome

109. Sometimes the starting codon is GUG in place of AUG, GUG normally code for:-
(1) Valine (2) Glycine
(3) Methionine (4) Tyrosine

110. Which one of the following triplet codes, is correctly matched with its specificity for an amino acid in protein synthesis or as 'start' or 'stop' codon ?
(1) UCG – Start
(2) UUU – Stop
(3) UGU – Leusine
(4) UAC – Tyrosine

111. During translation initiation in prokaryotes, a GTP molecule is needed in :-
(1) Formation of formyl-met-tRNA
(2) Binding of 30S subunit of ribosome with mRNA
(3) Association of 30 S-mRNA with formyl-met tRNA
(4) Association of 50 S subunit of ribosome with initiation complex

112. Degeneration of a genetic code is attributed to the :-
(1) First member of a codon
(2) Second member of a codon
(3) Entire codon
(4) Third member of a codon

113. What would happen if in a gene encoding a polypeptide of 50 amino acids, 25th codon (UAU) is mutated to UAA :-
(1) A polypeptide of 24 amino acids will be formed
(2) Two polypeptides of 24 and 25 amino acids will be formed
(3) A polypeptide of 49 amino acids will be formed
(4) A polypeptide of 25 amino acids will be formed

114. A sequence of how many nucleotides in messenger RNA makes a codon for an amino acid?
(1) Three (2) Four
(3) One (4) Two

115. A strand of DNA has following base sequence 3'–AAAAGTGACTAGTGA–5'.
On transcription, it produces an m–RNA which of the following anticodon of t–RNA recognizes the third codon of this mRNA?
(1) AAA (2) CUG
(3) GAC (4) CTG

116. Which one of the following statement is true for protein synthesis (translation) ?
(1) Amino acids are directly recognized by wm-RNA
(2) The third base of the codon is less specific
(3) Only one codon codes for an amino acid
(4) Every t-RNA molecule has more than one amino acid attachment site

117. Translation is the process in which: -
(1) DNA is formed on DNA template
(2) RNA is formed on DNA template
(3) DNA is formed on RNA template
(4) Protein is formed from RNA message

118. In a polypeptide chain of 125 amino acids, if the 25th codon is mutated to UAA, then :-
(1) A polypeptide of 124 amino acid is formed
(2) A polypeptide of 25 amino acid is formed
(3) A polypeptide of 24 amino acid is formed
(4) Any of the above can be possible

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119. The first codon discovered by Nirenberg and Mathii was :-
(1) CCC (2) GGG (3) UUU (4) AAA

120. t-RNA attaches, amino acid at its :-
(1) 3' end (2) 5' end
(3) Anticodon (4) Loop

121. Out of 64 codons only 61 codes for the 20 different amino acids. This character of genetic code is called :-
(1) Degeneracy
(2) Non ambiguous nature
(3) Universal
(4) Overlapping

122. Anticodons are found in :-
(1) m RNA (2) t RNA
(3) r RNA (4) In all

123. One-gene-one enzyme hypothesis was proposed by:-
(1) Beadle and Tatum
(2) Jacob and Monod
(3) Lederberg
(4) Watson and Crick

124. Which of the following RNA play structural and catalytic role during translation?
(1) m-RNA (2) t-RNA
(3) r-RNA (4) All

125. Transfer of genetic information from a polymer of nucleotides to a polymer of amino acid is :–
(1) Replication
(2) Transcription
(3) Translation
(4) Reverse transcription

126. Translation refers to the process of :–
(1) Polymerisation of nitrogen bases
(2) Polymerisation of nucleotides
(3) Polymerisation of nucleosides
(4) Polymerisation of amino acids

GENE REGULATION

127. Gene and cistron words are sometimes used synonymously because:–
(1) One cistron contains many genes
(2) One gene contains many cistrons
(3) One gene contains one cistron
(4) One gene contains no cistron

128. A gene containing multiple exons and at least one intron is termed as :-
(1) split gene (2) operator gene
(3) synthetic gene (4) epistatic gene

129. Gene which is responsible for the synthesis of a polypeptide chain is called :-
(1) Promotor gene (2) Structural gene
(3) Regulator gene (4) Operator gene

130. What does "lac" refer to, in what we call the lac operon ?
(1) Lactose
(2) Lactase
(3) Lac insect
(4) The number 1,00,000

131. Which of the following is not produced by *E. coli* in the lactose operon ?
(1) β galactosidase
(2) Transacetylase
(3) Lactose dehydrogenase
(4) Lactose permease

132. A functional complex comprising a cluster of genes including structural gene, a promoter gene, an operator gene and a regulator gene was discovered by :-
(1) Beadle and Tatum (1958)
(2) Watson and crick (1953)
(3) Jacob and Monad (1961)
(4) Britten and Davidson (1961)

133. Who explained the operon model for the first time?
(1) Francois Jacob
(2) Jacques Monod
(3) Francois Jacob and Jacques Monod
(4) Beadle & Tatum

134. The accessibility of promotor regions of prokaryotic DNA by RNA polymerase is in many cases regulated by the interaction of some protein with sequences termed as :–
(1) Promoter (2) Operator
(3) Regulator (4) Cistron

135. Regulation of lac operon by repressor is referred to as :–
(1) Positive regulation
(2) Negative regulation
(3) Both (1) and (2)
(4) None

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136. Which is incorrect?
(1) i-gene codes for the repressor of lac operon
(2) z-gene codes for the beta-galactosidase
(3) y-gene codes for transacetylase
(4) three gene products are required for metabolism of lactose

137. Which is the primary step for regulation of gene expression, in eukaryotes?
(1) Transport of m-RNA from nucleus to the cytoplasm
(2) Translational level
(3) Processing level
(4) Transcriptional level

138. Find out the correct sequence of structural gene in lac operon :-
(1) y, a, z (2) a, z, y
(3) z, y, a (4) z, a y

MUTATION

139. The concept of sudden genetic change which breeds true in an organism is visualized as ?
(1) Natural selection
(2) Inheritance of acquired characters
(3) Mutation
(4) Independent assortment

140. Mutation is :-
(1) An abrupt or discontinuous change which is inherited
(2) A factor for plant growth
(3) A change which affects parents only and is never inherited
(4) A change which affects the offspring of F_2 generation

141. The exchange of chromosomal parts between non homologous pairs of chromosome :-
(1) Crossing over/Transduction
(2) Translocation
(3) Inversion
(4) Transition

142. Which of the following can be called a mutation?
(1) The halfing of the chromosome number at meiosis
(2) The doubling of the chromosome after syngamy
(3) The possession of an additional chromosome
(4) All the above

143. Mutations are generally :-
(1) Dominant
(2) Recessive
(3) Codominant
(4) Incompletely dominant

144. Genetic or gene mutations occur in :-
(1) DNA
(2) RNA
(3) Protein
(4) RNA & protein both

145. Which of the following undergoes change in mutation?
(1) Chromosome (2) Structure of gene
(3) Sequence of gene (4) Any of the above

146. The locus of point mutation is generally :-
(1) Gene (2) Chromosome
(3) Centromere (4) Nucleus

147. In the octaploid wheat (56), the haploid (n) and basic numbers (x) of chromosomes are:-
(1) n = 21, x = 7 (2) n = 28, x = 7
(3) n = 7 x = 28 (4) n = 7, x = 21

148. The smallest unit of genetic material which upon mutation produce a phenotypic effect is:
(1) Mutons (2) Recon
(3) Gene (4) Cistron

149. Ultimate source of genetic variation is (OR) the process which provides raw material for evolution is:-
(1) Sexual reproduction
(2) Meiosis
(3) Mutation
(4) Independent assortment

150. Type of gene mutation which involves replacement of purine with pyrimidine or vice versa (OR) The substitution of one type of base with another type of base is :-
(1) Transduction (2) Transversion
(3) Translocation (4) Transcription

151. The minimum requirement for mutation is:-
(1) Change of triplet codon
(2) Change in single nucleotide
(3) Change in whole DNA
(4) Change in single strand of DNA

152. Mutations are :-
(1) Always useful (2) Mostly useful
(3) Never useful (4) Rarely useful

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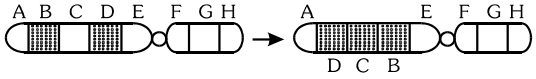
153. Sickle cell anaemia is an example of :-
(1) Frame shift mutation
(2) Point mutation
(3) Segmental mutation
(4) Gibberish mutation

154. The most striking example of frame shift mutation was found in a disease called :-
(1) Sickle cell anaemia
(2) Colour blindness
(3) Laesh-Nyhn Syndrome
(4) Thalassemia

155. A nutritionally wild type organism, which does not require any additional growth supplement is known as :-
(1) Holotype (2) Auxotroph
(3) Prototroph (4) Phenotype

156. Given below is the representation of a kind of chromosomal mutation :
What is the kind of mutation represented?



(1) deletion
(2) duplication
(3) inversion
(4) reciprocal translocation

157. The "cri-du-chat" syndrome is caused by change in chromosome structure involving:-
(1) Deletion (2) Duplication
(3) Inversion (4) Translocation

158. A class of mutation induced by addition or deletion of a nucleotide is called :-
(1) Missense (2) Non-sense
(3) Substitution (4) frame shift

159. Chromosomes with genes **abcdefg** becoming **abedcfg** is :-
(1) duplication (2) deletion
(3) translocation (4) inversion

160. Gene mutation is :-
(1) change in the number of chromosome
(2) mutation in the phosphodiester linkage
(3) mutation in the chromosomes
(4) change in the sequence of nitrogenous bases

161. Chromosome number 2n-1 is an example of**:-**
(1) trisomy (2) euploidy
(3) polyploidy (4) monosomy

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162. After a mutation at a genetic locus the character of an organism changes due to the change in :-
(1) protein structure
(2) DNA replication
(3) protein synthesis pattern
(4) RNA transcription pattern.

DNA FINGERPRINTING, HUMAN GENOME PROJECT

163. DNA finger printing was invented by :–
(1) Kary Mullis (2) Alec Jeffery
(3) Dr. Paul Berg (4) Francis Collins

164. Which one of the following pairs of terms/ names mean one and the same thing ?
(1) Gene pool - genome
(2) Codon - gene
(3) Cistron - triplet
(4) DNA Fingerprinting - DNA profiling

165. Which step does not involve in DNA finger printing ?
(1) Southern blotting
(2) Gel electrophoresis
(3) Restriction enzyme digestion
(4) Northern blotting

166. The technique of transferring DNA fragment separated on agarose gel to a synthetic membrane such as nitrocellulose is known as-
(1) Northern blotting
(2) Southern blotting
(3) Western blotting
(4) Dot blotting

167. Western blotting is used for the identification of
(1) DNA (2) RNA
(3) Protein (4) All the above

168. The approximate number of genes contained in the genome of Kalpana Chawla was :-
(1) 40,000 (2) 30,000
(3) 80,000 (4) 1,00,000

169. The transfer of protein from electrophoretic gel to nitrocellulose membrane is known as :-
(1) transferase
(2) northern blotting
(3) western blotting
(4) southern blotting

170. Which of the following is not associated with HGP ?
(1) Bioinformatics
(2) Cloning vectors BAC & YAC
(3) Automated DNA sequencers
(4) VNTR

171. In density gradient centrifugation , the bulk DNA forms _____ while satellite DNA forms _____.
(1) Major peak; Minor peak
(2) Minor peak; Major peak
(3) Major peak; Major peak
(4) Minor peak; Minor peak

172. Which step is not correct in DNA finger printing ?
(1) Isolation of DNA
(2) Digestion of DNA by DNA ligase enzyme
(3) Separation of DNA by electrophoresis
(4) Hybridisation using labelled VNTR probe

173. DNA fingerprinting method is very useful for:
(1) DNA tests for identity & relationships
(2) Forensic studies
(3) Polymorphism
(4) All of the above

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	2	3	1	1	4	1	4	4	1	2	4	1	4	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	1	3	2	3	2	3	1	4	2	2	1	2	3	1
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	2	2	4	4	1	4	2	3	2	2	2	3	3	3	2
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	1	4	3	2	2	4	3	4	3	1	1	4	4	3	2
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	4	2	3	1	2	2	2	2	2	3	3	3	1	3	2
Question	74	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Answer	1	1	3	4	3	2	3	3	4	1	3	4	2	3	1
Question	91	92	93	94	95	96	97	98	99	100	101	102	76	104	105
Answer	3	3	2	4	3	2	3	1	4	1	4	3	3	1	3
Question	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Answer	3	2	2	1	4	3	4	1	1	3	2	4	3	3	1
Question	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
Answer	1	2	1	3	3	4	3	1	2	1	3	3	3	2	2
Question	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Answer	3	4	3	3	1	2	3	2	1	4	1	2	1	3	2
Question	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165
Answer	2	4	2	4	3	3	1	4	4	4	4	1	2	4	4
Question	166	167	168	169	170	171	172	173							
Answer	2	3	2	3	4	1	2	4							

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Exercise-II (Previous Year Questions) AIPMT/NEET

AIPMT 2006

1. Amino acid sequence, in protein synthesis is decided by the sequence of:-
(1) tRNA (2) mRNA
(3) cDNA (4) rRNA

2. One gene-one enzyme hypothesis was postulated by:-
(1) R. Franklin
(2) Hershey and Chase
(3) A. Garrod
(4) Beadle and Tatum

3. One turn of the helix in a B-form DNA is approximately:-
(1) 20 nm (2) 0.34 nm
(3) 3.4 nm (4) 2 nm

4. Antiparallel strands of a DNA molecule means that :-
(1) one strand turns anti-clockwise
(2) the phosphate groups of two DNA strands, at their ends, share the same position
(3) the phosphate groups at the start of two DNA strands are in opposite position (pole)
(4) one strand turns clockwise

5. Cri-du-chat syndrome in humans is caused by the :-
(1) Fertilization of an XX egg by a normal Y-bearing sperm
(2) Loss of half of the short arm of chromosome 5
(3) Loss of half of the long arm of chromosome 5
(4) Trisomy of 21st chromosome

6. Triticale, the first man-made cereal crop, has been obtained by crossing wheat with:–
(1) Rye
(2) Pearl millet
(3) Sugarcane
(4) Barley

AIPMT 2007

7. Differentiation of organs and tissues in a developing organism, is association with :-
(1) Developmental mutations
(2) Differential expression of genes
(3) Lethal mutations
(4) Deletion of genes

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8. Molecular basis of organ differentiation depends on the modulation in transcription by:-
(1) RNA polymerase
(2) Ribosome
(3) Transcription factor
(4) Anticodon

9. The Okazaki fragments in DNA chain growth:-
(1) Result in transcription
(2) Polymerize in the 3'-to-5' direction and forms replication fork
(3) Prove semi-conservative nature of DNA replication
(4) Polymerize in the 5'-to-3' direction and explain 3'-to-5' DNA replication

10. The two polynucleotide chains in DNA are :-
(1) Parallel
(2) Discontinuous
(3) Antiparallel
(4) Semiconservative

11. In the hexaploid wheat, the haploid (n) and basic (x) numbers of chromosomes are :-
(1) $n = 7$ and $x = 21$
(2) $n = 21$ and $x = 21$
(3) $n = 21$ and $x = 14$
(4) $n = 21$ and $x = 7$

AIPMT 2008

12. Which of the following nitrogen base is not found in DNA?
(1) Thymine (2) Cytosine
(3) Guanine (4) Uracil

13. Polysome is formed by :-
(1) A ribosome with several subunits
(2) Ribosomes attached to each other in a linear arrangement
(3) Several ribosomes attached to a single mRNA
(4) Many ribosomes attached to a strand of endoplasmic reticulum

14. Which one of the following pairs of nitrogenous bases of nucleic acids, is ***wrongly*** matched with the category mentioned against it?
(1) Guanine, Adenine – *Purines*
(2) Adenine, Thymine – *Purines*
(3) Thymine, Uracil – *Pyrimidines*
(4) Uracil, Cytosine – *Pyrimidines*

15. In the DNA molecule :-
(1) the proportion of Adenine in relation to thymine varies with the organism
(2) there are two strands which run antiparallel one in 5' →3' direction and other in 3' → 5'
(3) the total amount of purine nucleotides and pyrimidine nucleotides is not always equal
(4) there are two strands which run parallel in the 5' →3' direction

16. Which one of the following pairs of codons is ***correctly*** matched with their function or the signal for the particular amino acid ?
(1) AUG,ACG – Start/Methionine
(2) UUA, UCA –Leucine
(3) GUU, GCU –Alanine
(4) UAG, UGA – Stop

17. Which of the following bond is not related to nucleic acid ?
(1) H-bond
(2) Ester bond
(3) Glycosidic bond
(4) Peptide bond

18. Haploids are more suitable for mutation studies than the diploids. This is because :-
(1) Haploids are more abundant in nature than diploids
(2) All mutations, whether dominant or recessive are expressed in haploids
(3) Haploids are reproductively more stable than diploids
(4) Mutagens penetrate in haploids more effectively than in diploids

TG: @Chalnaayaaar

AIPMT 2009

19. What is not true for genetic code ?
(1) It is unambiguous
(2) A codon in mRNA is read in a non-contiguous fashion
(3) It is nearly universal
(4) It is degenerate

20. Removal of introns and joining the exons in a defined order in a transcription unit is called:-
(1) Capping (2) Splicing
(3) Tailing (4) Transformation

21. Semiconservative replication of DNA was first demonstrated in :-
(1) *Salmonella typhimurium*
(2) *Drosophila melanogaster*
(3) *Escherichia coli*
(4) *Streptococcus pneumoniae*

22. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet" ?
(1) Beadle and Tatum
(2) Nirenberg and Mathaei
(3) Hershey and Chase
(4) Morgan and Sturtevant

23. Point mutation involves :-
(1) Deletion
(2) Insertion
(3) Change in single base pair
(4) Duplication

AIPMT 2010

24. Select the two correct statements out of the four (a-d) given below about lac operon:
(a) Glucose or galactose may bind with the repressor and inactivated
(b) In the absence of lactose the repressor binds with the operator region
(c) The z-gene codes for permease
(d) This was elucidated by Francois Jacob and Jacque Monod
The correct statements are :-
(1) (b) and (d)
(2) (a) and (b)
(3) (b) and (c)
(4) (a) and (c)

TG: @Chalnaayaaar

25. Satellite DNA is useful tool in :-
(1) Forensic science
(2) Genetic engineering
(3) Organ transplantation
(4) Sex determination

26. The one aspect which is not a salient feature of genetic code, is its being :-
(1) Universal
(2) Specific
(3) Degenerate
(4) Ambiguous

27. Which one of the following does not follow the central dogma of molecular biology?
(1) *Chlamydomonas*
(2) HIV
(3) Pea
(4) Mucor

AIPMT (Pre.) 2012

28. PCR and Restriction Fragment Length Polymorphism are the methods for: -
(1) DNA sequencing
(2) Genetic fingerprinting
(3) Study of enzymes
(4) Genetic transformation

AIPMT (Mains) 2012

29. What is it that forms the basis of DNA Fingerprinting?
(1) The relative amount of DNA in the ridges and grooves of the fingerprints.
(2) Satellite DNA occurring as highly repeated short DNA segments
(3) The relative proportions of purines and pyrimidines in DNA
(4) The relative difference in the DNA occurence in blood, skin and saliva

30. Read the following four statements (A-D):
(A) In transcription, adenosine pairs with uracil.
(B) Regulation of *lac* operon by repressor is referred to as positive regulation.
(C) The human genome has approximately 50,000 genes.
(D) Haemophilia is a sex-linked recessive disease.
How many of the above statements are right?
(1) Four (2) One
(3) Two (4) Three

31. Which one of the following is a wrong statement regarding mutations?
(1) UV and Gamma rays are mutagens
(2) Change in a single base pair of DNA does not cause mutation
(3) Deletion and insertion of base pairs cause frame-shift mutations.
(4) Cancer cells commonly show chromosomal aberrations.

NEET-UG 2013

32. Which enzyme/s will be produced in a cell in which there is a nonsense mutation in the lac Y-gene?
(1) Lactose permease and transacetylase
(2) β-galactosidase
(3) Lactose permease
(4) Catalase

33. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by :-
(1) Restriction mapping
(2) Centrifugation
(3) Polymerase chain reaction
(4) Electrophoresis

AIPMT 2014

34. Commonly used vectors for human genome sequencing are :-
(1) T-DNA
(2) BAC and YAC
(3) Expression Vectors
(4) T/A Cloning Vectors

AIPMT 2015

35. In sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentages of the other three bases expected to be present in this DNA are :-
(1) G 17%, A 16.5%, T 32.5%
(2) G 17%, A 33%, T 33%
(3) G 8.5%, A 50%, T 24.5%
(4) G 34%, A 24.5%, T 24.5%

TG: @Chalnaayaaar

36. Gene regulation governing lactose operon of *E.coli* that involves the lac I gene product is :-
(1) Negative and inducible because repressor protein prevents transcription
(2) Negative and repressible because repressor protein prevents transcription
(3) Feedback inhibition because excess of β-galactosidase can switch off transcription
(4) Positive and inducible because it can be induced by lactose

37. The movement of a gene from one linkage group to another is called :-
(1) Duplication
(2) Translocation
(3) Crossing over
(4) Inversion

Re-AIPMT 2015

38. Which of the following biomolecules does have a phosphodiester bond?
(1) Nucleic acids in a nucleotide
(2) Fatty acids in a diglyceride
(3) Monosaccharides in a polysaccharide
(4) Amino acids in a polypeptide

39. Which one of the following is **not** applicable to RNA?
(1) Chargaff's rule
(2) Complementary base pairing
(3) 5' phosphoryl and 3' hydroxyl ends
(4) Heterocyclic nitrogenous bases

40. Satellite DNA is important because it :-
(1) Codes for enzymes needed for DNA replication
(2) Codes for proteins needed in cell cycle
(3) Shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children
(4) Does not code for proteins and is same in all members of the population

41. Identify the **correct** order of organisation of genetic material from largest to smallest :-
(1) Chromosome, genome, nucleotide, gene
(2) Chromosome, gene, genome, nucleotide
(3) Genome, chromosome, nucleotide, gene
(4) Genome, chromosome, gene, nucleotide

TG: @Chalnaayaaar

NEET-I 2016

42. Which of the following is required as inducer(s) for the expression of Lac operon?
(1) Glucose
(2) Galactose
(3) Lactose
(4) Lactose and galactose

43. A complex of ribosomes attached to a single strand of RNA is known as :-
(1) Polysome
(2) Polymer
(3) Polypeptide
(4) Okazaki fragment

44. Which of the following is **not** required for any of the techniques of DNA fingerprinting available at present?
(1) Polymerase chain reaction
(2) Zinc finger analysis
(3) Restriction enzymes
(4) DNA–DNA hybridization

45. Which one of the following is the starter codon?
(1) AUG (2) UGA (3) UAA (4) UAG

NEET-II 2016

46. Taylor conducted the experiment to prove semiconservative mode of chromosome replication on : -
(1) *Drosophila melanogaster*
(2) *E. coli*
(3) *Vinca rosea*
(4) *Vicia faba*

47. The equivalent of a structural gene is :-
(1) Operon (2) Recon
(3) Muton (4) Cistron

48. Which of the following rRNAs acts as structural RNA as well as ribozyme in bacteria?
(1) 23 S rRNA (2) 5.8 S rRNA
(3) 5 S rRNA (4) 18 S rRNA

49. A non-proteinaceous enzyme is :-
(1) Ligase
(2) Deoxyribonuclease
(3) Lysozyme
(4) Ribozyme

TG: @Chalnaayaaar

50. A molecule that can act as a genetic material must fulfill the traits given below, **except** :-
(1) It should be unstable structurally and chemically
(2) It should provide the scope for slow changes that are required for evolution
(3) It should be able to express itself in the form of 'Mendelian characters'
(4) It should be able to generate its replica

51. DNA-dependent RNA polymerase catalyzes transcription on one strand of the DNA which is called the :-
(1) Alpha strand
(2) Antistrand
(3) Template strand
(4) Coding strand

52. The mechanism that causes a gene to move from one linkage group to another is called:-
(1) Translocation
(2) Crossing-over
(3) Inversion
(4) Duplication

NEET(UG) 2017

53. The final proof for DNA as the genetic material came from the experiments of :-
(1) Hershey and Chase
(2) Avery, Mcleod and McCarty
(3) Hargobind Khorana
(4) Griffith

54. DNA fragments are:-
(1) Negatively charged
(2) Neutral
(3) Either positively or negatively charged depending on their size
(4) Positively charged

55. If there are 999 bases in an RNA that codes for a protein with 333 amino acids, and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered?
(1) 11 (2) 33
(3) 333 (4) 1

56. During DNA replication, Okazaki fragments are used to elongate:-
(1) The lagging strand towards replication fork.
(2) The leading strand away from replication fork.
(3) The lagging strand away from the replication fork.
(4) The leading strand towards replication fork.

57. Which of the following RNAs should be most abundant in animal cell ?
(1) t-RNA (2) m-RNA
(3) mi-RNA (4) r-RNA

58. What is the criterion for DNA fragments movement on agarose gel during gel electrophoresis ?
(1) The smaller the fragment size, the farther it moves
(2) Positively charged fragments move to farther end
(3) Negatively charged fragments do not move
(4) The larger the fragment size, the farther it moves

59. DNA replication in bacteria occurs:-
(1) Within nucleolus
(2) Prior to fission
(3) Just before transcription
(4) During S phase

60. Spliceosomes are not found in cells of:-
(1) Fungi (2) Animals
(3) Bacteria (4) Plants

61. The association of histone H1 with a nucleosome indicates:-
(1) DNA replication is occurring.
(2) The DNA is condensed into a Chromatin Fibre.
(3) The DNA double helix is exposed.
(4) Transcription is occurring.

NEET(UG) 2018

62. The experimental proof for semiconservative replication of DNA was first shown in a:-
(1) Fungus (2) Bacterium
(3) Plant (4) Virus

TG: @Chalnaayaaar

63. Select the ***correct*** match :-
(1) Alec Jeffreys – *Streptococcus pneumoniae*
(2) Alfred Hershey and Martha Chase – TMV
(3) Matthew Meselson and F. Stahl – *Pisum sativum*
(4) Francois Jacob and Jacques Monod – *Lac* operon

64. Select the ***correct*** Match :-
(1) Ribozyme - Nucleic acid
(2) F_2 × Recessive parent - Dihybrid cross
(3) T.H. Morgan - Transduction
(4) G. Mendel - Transformation

65. AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA ?
(1) AGGUAUCGCAU (2) UGGTUTCGCAT
(3) ACCUAUGCGAU (4) UCCAUAGCGUA

66. All of the following are part of an operon *except* :-
(1) an operator
(2) structural genes
(3) an enhancer
(4) a promoter

NEET(UG) 2019

67. Purines found both in DNA and RNA are :-
(1) Adenine and thymine
(2) Adenine and guanine
(3) Guanine and cytosine
(4) Cytosine and thymine

68. Under which of the following conditions will there be no change in the reading frame of following mRNA ?
5'AACAGCGGUGCUAUU3'
(1) Insertion of G at 5th position
(2) Deletion of G from 5th position
(3) Insertion of A and G and 4th and 5th positions respectively
(4) Deletion of GGU from 7th, 8th and 9th positions

69. Expressed Sequence Tags (ESTs) refers to :-
(1) Genes expressed as RNA
(2) Polypeptide expression
(3) DNA polymorphism
(4) Novel DNA sequences

70. Match the following genes of the Lac operon with their respective products :-

(a)	i gene	(i)	β-galactosidase
(b)	z gene	(ii)	Permease
(c)	a gene	(iii)	Repressor
(d)	y gene	(iv)	Transacetylase

Select the **correct** option.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(i)	(iii)	(ii)	(iv)
(2)	(iii)	(i)	(ii)	(iv)
(3)	(iii)	(i)	(iv)	(ii)
(4)	(iii)	(iv)	(i)	(ii)

NEET(UG) 2019 (Odisha)

71. What will be the sequence of mRNA produced by the following stretch of DNA ?
3'ATGCATGCATGCATG5'
TEMPLATE STRAND
5'TACGTACGTACGTAC3' CODING STRAND
(1) 3'AUGCAUGCAUGCAUG5'
(2) 5'UACGUACGUACGUAC3'
(3) 3'UACGUACGUACGUAC5'
(4) 5'AUGCAUGCAUGCAUG3'

72. Match the following RNA polymerase with their transcribed products :-
(a) RNA polymerase I (i) tRNA
(b) RNA polymerase II (ii) rRNA
(c) RNA polymerase III (iii) hnRNA
Select the correct option from the following :
(1) a-i, b-iii, c-ii (2) a-i, b-ii, c-iii
(3) a-ii, b-iii, c-i (4) a-iii, b-ii, c-i

73. From the following, identify the **correct combination** of salient features of Genetic Code :-
(1) Universal, Non-ambiguous, Overlapping
(2) Degenerate, Overlapping, Commaless
(3) Universal, Ambiguous, Degenerate
(4) Degenerate, Non-overlapping, Non-ambiguous

TG: @Chalnaayaaar

TG: @Chalnaayaaar

74. Which scientist experimentally proved that DNA is the sole genetic material in bacteriophage ?
(1) Beadle and Tautum
(2) Messelson and Stahl
(3) Hershey and Chase
(4) Jacob and Monod

75. In the process of transcription in Eukaryotes, the RNA polymerase I transcribes :-
(1) mRNA with additional processing, capping and tailing
(2) tRNA, 5 S rRNA and snRNAs
(3) rRNAs–28 S, 18 S and 5.8 S
(4) Precursor of mRNA, hnRNA

76. What initiation and termination factors are involved in transcription in prokaryotes ?
(1) σ and ρ, respectively
(2) α and β, respectively
(3) β and γ, respectively
(4) α and σ, respectively

NEET(UG) 2020

77. Which of the following statements is **correct** ?
(1) Adenine does not pair with thymine
(2) Adenine pairs with thymine through two H-bonds
(3) Adenine pairs with thymine through one H-bond
(4) Adenine pairs with thymine through three H-bonds

78. If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is 6.6×10^9 bp, then the length of the DNA is approximately: -
(1) 2.7 meters (2) 2.0 meters
(3) 2.5 meters (4) 2.2 meters

79. Name the enzyme that facilitates opening of DNA helix during transcription: -
(1) RNA polymerase (2) DNA ligase
(3) DNA helicase (4) DNA polymerase

TG: @Chalnaayaaar

80. The first phase of translation is :-
(1) Recognition of an anti-codon
(2) Binding of mRNA to ribosome
(3) Recognition of DNA molecule
(4) Aminoacylation of tRNA

81. In gel electrophoresis, separated DNA fragments can be visualized with the help of :-
(1) Ethidium bromide in infrared radiation
(2) Acetocarmine in bright blue light
(3) Ethidium bromide in UV radiation
(4) Acetocarmine in UV radiation

NEET(UG) 2020 (COVID-19)

82. The term 'Nuclein' for the genetic material was used by :-
(1) Franklin
(2) Meischer
(3) Chargaff
(4) Mendel

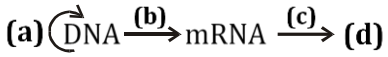
83. In the polynucleotide chain of DNA, a nitrogenous base is linked to the –OH of:-
(1) 2'C pentose sugar
(2) 3'C pentose sugar
(3) 5'C pentose sugar
(4) 1'C pentose sugar

84. *E.coli* has only 4.6×10^6 base pairs and completes the process of replication within 18 minutes; then the average rate of polymerisation is approximately: -
(1) 2000 base pairs/second
(2) 3000 base pairs/second
(3) 4000 base pairs/second
(4) 1000 base pairs/second

85. Which is the basis of genetic mapping of human genome as well as DNA finger printing ?
(1) Polymorphism in DNA sequence
(2) Single nucleotide polymorphism
(3) Polymorphism in hnRNA sequence
(4) Polymorphism in RNA sequence

NEET(UG) 2021

86. Complete the flow chart on central dogma:-



(1) (a)-Replication; (b)-Transcription; (c)-Transduction; (d)-Protein
(2) (a)-Translation; (b)-Replication; (c)-Transcription; (d)-Transduction
(3) (a)-Replication; (b)-Transcription; (c)-Translation; (d)-Protein
(4) (a)-Transduction; (b)-Translation; (c)-Replication; (d)-Protein

87. Identify the **correct** statement:-
(1) In capping, methyl guanosine triphosphate is added to the 3' end of hnRNA.
(2) RNA polymerase binds with Rho factor to terminate the process of transcription in bacteria.
(3) The coding strand in a transcription unit is copied to an mRNA.
(4) Split gene arrangement is characteristic of prokaryotes.

88. What is the role of RNA polymerase III in the process of transcription in eukaryotes?
(1) Transcribes rRNAs (28S, 18S and 5.8S)
(2) Transcribes tRNA, 5s rRNA and snRNA
(3) Transcribes precursor of mRNA
(4) Transcribes only snRNAs

89. DNA fingerprinting involves identifying differences in some specific regions in DNA sequence, called as :-
(1) Satellite DNA
(2) Repetitive DNA
(3) Single nucleotides
(4) Polymorphic DNA

90. Which is the "Only enzyme" that has "Capability" to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes?
(1) DNA dependent DNA polymerase
(2) DNA dependent RNA polymerase
(3) DNA Ligase
(4) DNase

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91. Which of the following RNAs is not required for the synthesis of protein?
(1) mRNA (2) tRNA
(3) rRNA (4) siRNA

92. If Adenine makes 30% of the DNA molecule, what will be the percentage of Thymine, Guanine and Cytosine in it?
(1) T : 20; G : 30; C : 20
(2) T : 20; G : 20; C : 30
(3) T : 30; G : 20; C : 20
(4) T : 20; G : 25; C : 25

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93. Read the following statements and choose the set of **correct** statements: -
(a) Euchromatin is loosely packed chromatin
(b) Heterochromatin is transcriptionally active
(c) Histone octomer is wrapped by negatively charged DNA in nucleosome
(d) Histones are rich in lysine and arginine
(e) A typical nucleosome contains 400 bp of DNA helix

Choose the **correct answer** from the options given below:
(1) (a), (c), (d) Only (2) (b), (e) Only
(3) (a), (c), (e) Only (4) (b), (d), (e) Only

94. DNA polymorphism forms the basis of:-
(1) DNA finger printing
(2) Both genetic mapping and DNA finger printing
(3) Translation
(4) Genetic mapping

95. The process of translation of mRNA to proteins begins as soon as :-
(1) The larger subunit of ribosome encounters mRNA
(2) Both the subunits join together to bind with mRNA
(3) The tRNA is activated and the larger subunit of ribosome encounters mRNA
(4) The small subunit of ribosome encounters mRNA

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96. If a geneticist uses the blind approach for sequencing the whole genome of an organism, followed by assignment of function to different segments, the methodology adopted by him is called as:-
(1) Gene mapping
(2) Expressed sequence tags
(3) Bioinformatics
(4) Sequence annotation

97. In an *E.coli* strain *i* gene gets mutated and its product can not bind the inducer molecule. If growth medium is provided with lactose, what will be the outcome?
(1) *z, y, a* genes will be transcribed
(2) *z, y, a* genes will not be translated
(3) RNA polymerase will bind the promoter region
(4) Only *z* gene will get transcribed

98. If the length of a DNA molecule is 1.1 metres, what will be the approximate number of base pairs ?
(1) 6.6×10^9 bp (2) 3.3×10^6 bp
(3) 6.6×10^6 bp (4) 3.3×10^9 bp

99. Ten *E.coli* cells with ^{15}N - dsDNA are incubated in medium containing ^{14}N nucleotide. After 60 minutes, how many *E.coli* cells will have DNA totally free from ^{15}N ?
(1) 40 cells (2) 60 cells
(3) 80 cells (4) 20 cells

100. Match **List - I** with **List - II** :-

List - I	**List - II**
(a) In *lac* operon **i** gene codes for	(i) transacetylase
(b) In *lac* operon **z** gene codes for	(ii) permease
(c) In *lac* operon **y** gene codes for	(iii)b-galactosidase
(d) In *lac* operon **a** gene codes for	(iv) Repressor

Choose the **correct answer** from the options given below :
(1) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv)
(2) (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)
(3) (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)
(4) (a) - (iii), (b) - (i), (c) - (iv), (d) - (ii)

101. Given below are two statements: -
Statement I:
DNA polymerases catalyse polymerisation only in one direction, that is $5' \rightarrow 3'$
Statement II :
During replication of DNA, on one strand the replication is continuous while on other strand it is discontinuous.
In the light of the above statements, choose the **correct answer** from the options given below :
(1) Both **Statement I** and **Statement II** are correct
(2) Both **Statement I** and **Statement II** are incorrect
(3) Statement I is correct but **Statement II** is incorrect
(4) **Statement I** is incorrect but **Statement II** is correct

102. Match **List-I** with **List-II** :-

List-I	**List-II**
(a) Bacteriophage $\phi \times 174$	(i) 48502 base pairs
(b) Bacteriophage lambda	(ii) 5386 nucleotides
(c) *Escherichia coli*	(iii) 3.3×10^9 base pairs
(d) Haploid content of human DNA	(iv) 4.6×10^6 base pairs

Choose the **correct answer** from the options given below:
(1) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)
(2) (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)
(3) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)
(4) (a) - (i), (b) - (ii), (c) - (iv), (d) - (iii)

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103. If DNA contained sulphur instead of phosphorus and proteins contained phosphorus instead of sulfur, what would have been the outcome of Hershey and Chase experiment?
(1) No radioactive sulfur in bacterial cells
(2) Both radioactive sulfur and phosphorus in bacterial cells
(3) Radioactive sulfur in bacterial cells
(4) Radioactive phosphorus in bacterial Cells

104. In *lac* operon, z gene codes for :-
(1) β-galactosidase
(2) Permease
(3) Repressor
(4) Transacetylase

EXERCISE-II (Previous Year Questions) **ANSWER KEY**

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	4	3	3	2	1	2	3	4	3	4	4	3	2	2
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	4	4	2	2	2	3	2	3	1	1	4	2	2	2	3
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	2	2	4	2	2	1	2	1	1	3	4	3	1	2	1
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	4	4	1	4	1	3	1	1	1	2	3	4	1	2	3
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	2	2	4	1	1	3	2	4	1	3	2	3	4	3	3
Question	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Answer	1	2	4	1	4	3	2	4	1	1	3	2	2	2	2
Question	91	92	93	94	95	96	97	98	99	100	101	102	103	104	
Answer	4	3	1	2	4	4	2	4	2	2	1	3	3	1	

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Exercise-III Master Your Understanding

EXERCISE-III(A) (NCERT BASED QUESTIONS)

1. Match the following :-

(A) $\phi \times 174$	(i) 48502 bp
(B) Lambda phage	(ii) 5386 Nucleotides
(C) E. Coli	(iii) 6.6×10^9 bp
(D) Human somatic cell	(iv) 4.6×10^6 bp

(1) A(i), B(ii), C(iv), D(iii)
(2) A(ii), B(i), C(iv), D(iii)
(3) A(i), B(ii), C(iii), D(iv)
(4) A(iv), B(iii), C(ii), D(i)

2. Which of the following pyrimidine base is common in both DNA and RNA:-
(1) Adenine (2) Guanine
(3) Cytosine
(4) Thymine

3. In nucleoside which of the following bond exists between sugar and nitrogenaous base:-
(1) Phosphodiester bond
(2) Hydrogen bond
(3) Phosphoester bond
(4) N-glycosidic bond

4. By which of the following bond phosphoric acid remain linked with 5' carbon of sugar in one nucleotide:-
(1) Phosphoester bond
(2) Phosphodiester bond
(3) N-Glycosidic bond
(4) Hydrogen bond

5. The backbone in a polynucleotide chain is formed due to:-
(1) Sugars and nitrogenous bases
(2) Phosphates and nitrogenous base
(3) Nitrogenous bases and histones
(4) Sugar and phosphates

6. In RNA, every nucleotide residue has an additional – OH group at which of the following position?
(1) 2' position of deoxyribose
(2) 1' position of ribose sugar
(3) 3' position of ribose sugar
(4) 2' position of ribose sugar

7. DNA as an acidic substance present in nucleus was first identified by:-
(1) Wilkins and Franklin
(2) Watson and Crick
(3) Friedich meischer
(4) Altmann

8. Double helix model of DNA proposed by Watson and crick was based on:-
(1) X-ray diffraction data of Meischer
(2) X-ray crystallography data of Wilkins and Franklin
(3) X-ray diffraction data of Watson and Crick
(4) X-ray diffraction data of Chargaff

9. Regarding to features of double helix structure of DNA which of the following is wrong?
(1) Two polynucleotide chains have antiparallel polarity
(2) The bases in two strands are paired through phosphodiester bonds
(3) Adenine form two hydrogen bonds with thymine
(4) The pitch of the helix is 3.4 nm

10. In addition to hydrogen bonding which of the following feature confers stability to helical structure?
(1) Phosphodiester bond
(2) Pairing between one purine and one pyrimidine
(3) Glycosidic linkage between sugar and nitrogenous base
(4) The plane of one base pair stacks over the other

11. Which of the following is responsible for constant distance between two polynuclestide chains in DNA?
(1) Antiparallel polarity of two polynucleotide strands
(2) Hydrogen bonding
(3) Pairing between one purine and one pyrimidine
(4) All the above

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12. Phosphoric acid remain associated with which of the following carbon of sugar in a nucleotide ?
(1) 1st (2) 3rd
(3) 4th (4) 5th

13. In there are 3.3 x 10^9 bp present in genome, then what would be the length of the DNA of any somatic cell?
(1) 1.1 meter (2) 2.2 meter
(3) 3.3 meter (4) 6.6 meter

14. Positive charge and basic nature of histone is due to abundance of:-
(1) Lysines and tryptophanes
(2) Arginines & threonines
(3) Lysines and arginines
(4) Tryptophanes and threonines

15. Negative charge of DNA is due to which of the following constituent:-
(1) Sugar
(2) Nitrogenous base
(3) Phosphoric acid
(4) Hydroxyl group (–OH) present on sugar

16. A typical nucleosome contains how much amount of DNA?
(1) 100 bp (2) 146 bp
(3) 200 bp (4) 346 bp

17. In a mammalian somatic cell how many nucleosomes are present?
(1) 6.6 x 10^9 (2) 3.3 x 10^9
(3) 3.3 x 10^7 (4) 3.3 x 10^5

18. Which of the following is actual sequence of packaging of DNA in eukaryotic cells?
(1) DNA → Chromatin → Nucleosome → Chromosome
(2) DNA → Nucleosome → Chromosome → Chromatin
(3) DNA → Nucleosome → Chromatin → Chromosome
(4) DNA → Chromosome → Chromatin → Nucleosome

19. The packaging of chromatin at higher level requires additional set of proteins that is known as:-
(1) Histone proteins
(2) NHC proteins
(3) Homeotic proteins
(4) Domain proteins

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20. Regarding to Meselson and Stahl experiment for semi conservative nature of DNA replication select out the wrong statement: -
(1) ^{15}N of $^{15}NH_4Cl$ was incorporated in DNA and other compounds
(2) ^{15}N & ^{14}N can be differentiate on the basis of radioactive activity
(3) Heavy and normal DNA molecules could be distinguished by CsCl density gradient centrifugation
(4) ^{15}N used in $^{15}NH_4Cl$ was not a radioactive isotope

21. If normal E. Coli is allow to grow for 80 minutes in $^{15}NH_4Cl$ medium then what would be the proportion of hybrid and heavy density DNA molecules:-
(1) 1 : 7 (2) 7 : 1 (3) 14 : 2 (4) 1 : 4

22. Semiconservative replication of DNA in chromosomes was proved by:-
(1) Meselson & Stahl by using $^{15}NH_4Cl$
(2) Taylor by using $^{15}NH_4Cl$
(3) Meselson & Stahl by using tritiated thymidine
(4) Taylor by using tritiated thymidine

23. How much duration of time required for replication of 4.6 x 10^6pb in E.coli?
(1) 83 minutes (2) 18 minutes
(3) 2 minutes (4) 3 hrs

24. What is the rate of polymerisation in *E.coli?*
(1) 20,000 bp per second
(2) 2000 nucleotides per second
(3) 2000 bp per minute
(4) 2000 bp per second

25. During replication large amount of energy get exhausted. The source of this energy is :-
(1) Deoxy ribonucleotide triphosphophate
(2) Deoxyribonucleoside monoplosphate
(3) Deoxyribonucleoside triphosphate
(4) Both 1 and 2

26. Regarding to direction of DNA replication select out the correct one :-
(1) 5' → 3' Template – continuous synthesis
(2) 3' → 5' Template – discontinuous synthesis
(3) 3' → 5' Template – continuous synthesis
(4) 5' → 3' Template – synthesis leading strand

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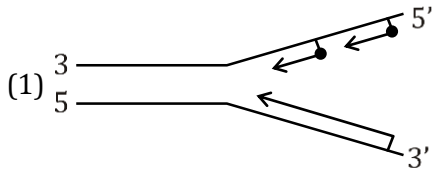
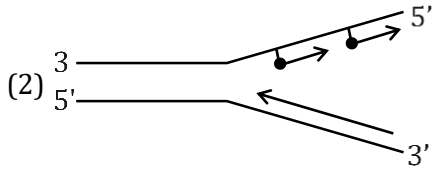
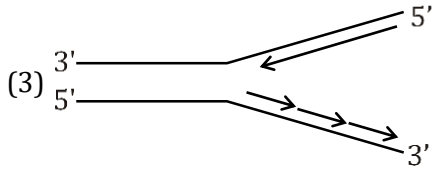
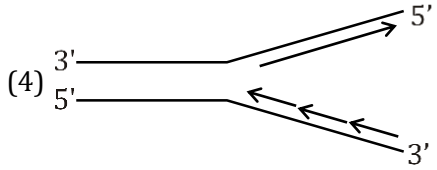
27. Which of the following scheme of replication fork is true?

(1) 

(2) 

(3) 

(4) 

28. Which of the following feature of RNA make it labile and easily degradable?
(1) Single stranded nature
(2) 2'–OH group on sugar
(3) Phosphodiester bond
(4) Absence of Hydrogen bond

29. Regarding to RNA which of the following feature is wrong?
(1) Catalytic property
(2) Labile and easily degradable
(3) Absence of thymine
(4) Presence of methylated uracil

30. Which of the following reason is suitable to explain that RNA is best for expression of characters?
(1) It shows catalytic properties
(2) Presence of 2'–OH group on ribose sugar
(3) It can directly code for the synthesis of protein
(4) Presence of uracil

31. An adapter molecule that would on one hand read the code and on the other hand would bind to specific amino acids is:-
(1) m-RNA (2) r-RNA
(3) t-RNA (4) hm-RNA

32. Which of the following r-RNA show structural as well as catalytic role in bacteria :-
(1) 16s rRNA (2) 23s rRNA
(3) 5s rRNA (4) 28s rRNA

33. The unequivocal proof that DNA is the genetic material came from the experiments of :-
(1) Griffith
(2) Avery, Macleod & Mccarty
(3) Hershey and Chase
(4) Watson and Crick

34. Radioactive (^{35}S) was detected in:-
(1) Supernatant (2) Sediment
(3) Both (4) Either 1 or 2

35. Which of the following is not a criteria for determination of genetic material?
(1) Ability of replication
(2) Chemically and structurally stable
(3) It should be non mutable
(4) Ability to express itself in from of Mendelian characters

36. Which of the following is responsible for short life span and fast rate of mutation and evolution?
(1) Presence of DNA
(2) Presence of highly reactive RNA
(3) Double stranded genetic material
(4) Single stranded genetic material

37. A transcription unit in DNA is defined primarily by three regions in DNA. These regions are:-
(1) Promoter, regulator and structural gene
(2) Promoter, structural gene and terminator
(3) Promoter, regulator and terminator
(4) Promoter, regulator and operator gene

38. In transcription unit promoter and terminator are determined on the basis of :-
(1) Coding strand (2) Template strand
(3) Noncoding strand (4) Antisense strand

39. In eukaryotes as well as prokaryotes those DNA sequences that appear in mature or processed RNA are known as :-
(1) Introns (2) Exons
(3) Recons (4) Mutons

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40. Which of the following exclusive property of transcription found in RNA-polymerase?
(1) Initiation (2) Elongation
(3) Termination (4) Processing

41. What is the length and constituent base of tail in functional m-RNA?
(1) Poly U – 200-300 bp
(2) Poly A – 200-300 bp
(3) Poly C – 200-300 nucleotides
(4) Poly A – 200-300 nucleotides

42. DNA dependent RNA polymerases mediated synthesis of RNA over DNA called transcription. About it which of the following statement is wrong:-
(1) In bacteria m-RNA does not required any processing to become active
(2) In eukaryotes there is clearcut division of labour in RNA polymerases
(3) Absence of introns in RNA of eukaryotes is reminiscent of antiquity
(4) RNA polymerase - III is responsible for synthesis of sn-RNA

43. At which of the following levels, regulation of gene expression in eukaryotes do not occur: -
(1) Transcription level
(2) Processing level
(3) Transport of ribosomal subunits from nucleus to cytoplasm level
(4) Translation level

44. In prokaryotes predominant site for control of gene expression is the :-
(1) Control of rate of processing of primary transcript
(2) Control of rate of transcription initiation
(3) Control of transport of m-RNA from nucleus to cytoplasm
(4) Control of Translation

45. Which of the following was not involved in deciphering of genetic code?
(1) Physicist George Gamow's permutation combination of 4^3 bases
(2) H.G. Khorana's based synthesis of RNA molecules with defined combination of bases
(3) Severo ochoa enzyme for polymerising DNA with defined sequences
(4) Marshall Nirenberg's cell free system for protein synthesis

46. Which of the following mutation forms the genetic basis of proof that codon is a triplet and it is read in a continuous manner?
(1) Chromosomal structural mutations
(2) Chromosomal numerical mutations
(3) Substitutional mutation
(4) Frame shift insertion or deletion mutation

47. Change in a single base pair of DNA can be termed as:-
(1) Chromosomal aberrations
(2) Point mutation
(3) Genomatric mutation
(4) Aneuploidy

48. Which of the following cell cycle event is responsible for aneuploidy based chromosomal disorders?
(1) Failure of G_1 phase
(2) Failure of DNA replication in s-phase
(3) Failure of segregation/Disjunction
(4) Failure of movement of chromosomes

49. Which of the following cell cycle event is responsible for polyploidy phenomenon:-
(1) Failure of karyokinesis
(2) Failure of cytokinesis
(3) Failure of segregation
(4) Failure of non-disjunction

50. Regarding to role of RNA in protein synthesis find out the odd one:-
(1) m-RNA - provides the template
(2) t-RNA - brings amino acids
(3) r-RNA - read genetic code
(4) sn-RNA splicing

51. A m-RNA also has some additional sequences that are not translated called UTR. The function of UTR is :-
(1) Charging of t-RNA
(2) Formation of peptide bond
(3) Helps in efficient translation
(4) Helps in translocation

52. The t-RNA move away from ribosomes after translocation of ribosome in relation to m-RNA, is known as :-
(1) Acylated t-RNA (2) Peptidyle t-RNA
(3) Deacylated t-RNA (4) Charged t-RNA

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53. The repressor of the operon is synthesized :-
(1) All the time
(2) Certain time
(3) Non constitutively
(4) None of these

54. HGP was closely associated with the rapid development of a new area in biology called as :-
(1) Biofortification
(2) Bioinformatics
(3) Biomining
(4) Biotransformation

55. Which of the following is not a goal of HGP?
(1) Identify all the approximately 20,000–25,000 genes
(2) Store this information in database
(3) Restrict the related technologies so that other sector do not benefited with it
(4) Address the ethical, legal and social issues

56. The human genome project was coordinated by :-
(1) U.S. department of energy
(2) National institute of health
(3) Sanger centre
(4) Both 1 and 2

57. Which of the following organism was not used as model organism is human genome project ?
(1) Arabidopsis
(2) Caenorhabdities elegans
(3) Rice
(4) Hyacinthus orientalis

58. Approach of HGP focused on identifying all the genes that expressed as RNA is known as:-
(1) Expressed sequence tags
(2) Sequence annotation
(3) Polymerase chain reaction
(4) Dermatoglyphics

59. Automated DNA sequencers worked on the principle of a method developed by:-
(1) Watson
(2) Chargaff
(3) Frederick sanger
(4) Singer and Nicolson

60. Regarding to salient features of human genome select out the incorrect one:-
(1) Human genome contains 3164.7 million nucleotide bases
(2) Human genome contain 30,000 genes
(3) y-chromosome has largest number of genes
(4) 1.4 million locations are associated with SNPs

61. Match the following :-

A.	SNPs	i	3164.7 million
B.	Genes of chromosome No. 1	ii	1.4 Million
C.	Total No. of Human genes	iii	30000
D.	Total nucleotides of human genome	iv	2968

	A	B	C	D
(1)	ii	iii	iv	i
(2)	ii	iv	iii	i
(3)	ii	iv	i	iii
(4)	iv	ii	iii	i

62. If an inheritable mutation is observed in a population at high frequency, it is referred as:-
(1) DNA polyploidy
(2) DNA polymorphism
(3) DNA redundancy
(4) Sequence annotation

63. Due to high degree of polymorphism, size of VNTR varies from :-
(1) 0.1 – 2 kb (2) 0.1 – 2000 kb
(3) 0.1 – 20 kb (4) 0.1 – 200 kb

64. What is the basis of heredity?
(1) Variations
(2) Inheritance
(3) Genetics
(4) Recombination

65. Which of the following is not the feature of human genome?
(1) Less than 2 percent of the genome code for protein
(2) Chromosome 1 has fewest gene (231)
(3) Repetitive sequences make up very large portion of human genome
(4) The functions are unknown for over 50% of the discovered genes

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66. The sequence of which chromosome was completed in May 2006?
(1) Chromosome number 1
(2) Chromosome number 2
(3) Chromosome number 5
(4) Chromosome number 10

EXERCISE-III(B) (ANALYTICAL QUESTIONS)

67. A point mutation which involves change of A→G, C→T, C→G and T→A in DNA are :-
(1) Transition, Transition, Transversion, Transversion
(2) Transition, Transversion, Transition, Transversion
(3) Transversion, Transition, Transversion, Transition
(4) None of the above

68. A segment of DNA has a base sequence : AAG, GAG, GAC, CAA, CCA–, Which one of the following sequence represents a frame shift mutation :-
(1) AAG, GAG, GAC, CAA, CCA–
(2) AAG, AGG, ACC, AAC, CA–
(3) ACG, GAG, GAC, CAG, CC–
(4) AAG, GCG, GAC, CAG, CC–

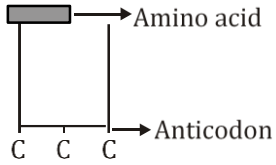
69. If the DNA-codons are ATGATGATG and a cytosine base is inserted at the beginning which of the following would be the result:-
(1) A non-sense mutation
(2) CA, TGA, TGA, TG
(3) CAT, GAT, GAT, G
(4) C, ATG, ATG, ATG

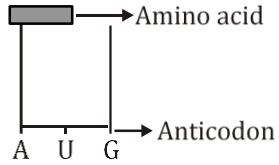
70. A completely radioactive double stranded DNA molecule undergoes two round of replication in a non-radioactive medium. What will be the radioactive status of the four daughter molecules ?
(1) All four still contain radioactivity
(2) Radioactivity is lost from all four
(3) Out of four, three contain radioactivity
(4) Half of the number contain no radioactivity

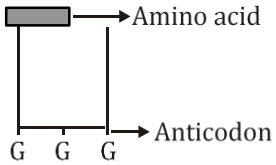
71. Consider the following sequence on m–RNA AUGGCAGUGCCA. Assuming that genetic code is overlap then how many number of codon may be present on this genetic code :-
(1) 9 (2) 10 (3) 8 (4) 11

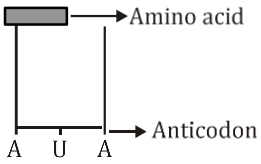
72. A normal DNA molecule is continuously replicate in N^{15} medium than what is the % of lighter DNA in 4^{th} generation?
(1) 12·5% (2) 25% (3) 0% (4) 6·25%

73. Find out the sequence of binding of the following amino acyl – t–RNA complexes during translation to an m–RNA transcribed by a DNA segment having the base sequence. 3' ATACCCATGGGG 5'. Choose the answer showing the correct order of alphabets:–

(a)


(b)


(c)


(d)


(1) a, b, c, d (2) d, a, b, c
(3) a, b, d, c (4) b, a, c, d

74. **KHORANA** synthesized two RNAs (a) with repeat sequence of AB and (b) with repeat sequence of ABC the polypeptides coded by (a) and (b) are respectively :-
(1) Homopolypeptides in both (a) and (b)
(2) Heteropolypeptides in both
(3) Homopolypeptide in (a) & heteropoly peptide in (b)
(4) Heteropolypeptide in (a) & homopoly peptide in (b)

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75. Which of the following m–RNA will be translated completely ?
(A) 5' AUG UGA UUA AAG AAA 3'
(B) 5' AUG AUA UUG CCC UGA 3'
(C) 5' AGU UCC AGA CUC UAA 3'
(D) 5' AUG UAC AGU AAC UAG 3'
(1) (A) and (B) (2) (B) and (D)
(3) (C) and (D) (4) (A) and (D)

76. In a m–RNA sequence of N_2–base is 5' AUG GUG CUC AAA' 3'. What is the correct sequence of anticodons which recognizes codons of m–RNA ?

UUU GAG UAC CAC
(a) (b) (c) (d)

(1) a, b, c, d (2) d, a, b, c
(3) c, d, b, a (4) d, c, b, a

77. Suppose evolution on earth has occurred in such a way that there are 96 amino acids instead of 20. DNA has 12 different types of bases and DNA synthesis occur in the same way as today. The minimum number of bases per condon would be:-
(1) 12 (2) 8 (3) 2 (4) 3

78. Assume that their are 6 types of nitrogen bases available and 40 types of amino acid are available for protein synthesis, then in genetic code each codon made up by minimum how many nitrogen bases ?
(1) 3 (2) 4
(3) 5 (4) 2

79. In a segment of DNA 3.2 kilobases are present. If DNA segment has 820 adenine molecules, then what will be number of cytosine ?
(1) 1560 (2) 1480
(3) 780 (4) 740

80. Which statement is correct ?
(a) Degeneracy of code is related to, third member of codon
(b) Single codon, codes for more than one amino acid
(c) In codon first two bases are more specific
(d) In codons, third base is wobble
(e) Codon is nearly universal
(1) a, b, c, d, e (2) a, b, d
(3) a, c, d (4) a, c, d, e

81. Both the strand of DNA are not copied during transcription because :-
(1) If both strands act as a template, they would code for RNA with different sequence
(2) The two RNA molecules, if produced simultaneously would be complementary to each other, hence would form a double stranded RNA
(3) They would code, for RNA molecules with same sequences
(4) Both (1) and (2) are correct

82. The salient features of B-DNA are :–
(i) It is made of two polynucleotide chain
(ii) Back bone is constituted by sugar and nitrogen base
(iii) Two chains have parallel polarity
(iv) Bases in two strands are paired through H-bonds
(v) The two chains are coiled in a left handed fashion
(1) i, iv, v (2) i, iv
(3) i, ii, v (4) i, ii, iii, iv, v

83. Which is incorrect for genetic code:–
(i) The codon is triplet
(ii) 64 codons code for amino acids
(iii) Genetic code is unambiguous
(iv) Genetic code is nearly universal
(v) AUG has dual functions
(1) only ii (2) ii & iii
(3) iii, iv + v (4) All are correct

84. Which is correct ?
(i) t-RNA has an anticodon loop that has bases complementary to the codon
(ii) t-RNA has an amino acid acceptor end
(iii) t-RNA are specific for each amino acid
(iv) For initiation, there is specific t-RNA that is referred to as initiator t-RNA
(v) For termination there is specific t-RNA that is referred to as terminator t-RNA
(1) i, ii (2) i, ii, iii
(3) i, ii, iii, iv (4) i, ii, iii, iv, v

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85. ***E.coli*** cells with a mutated z gene of the lac operon cannot grow in medium containing only lactose as the source of energy because:–

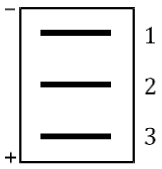
(1) They cannot synthesize functional betagalactosidase

(2) They cannot transport lactose from the medium into the cell

(3) The lac operon is constitutively active in these cells

(4) In the presence of glucose, E. coli cells do not utilize lactose

86. DNA fragments separated by gel electrophoresis are shown. Mark the correct statement :-



(1) Band 3 contains more positively charged DNA molecule than 1

(2) Band '3' indicates more charge density than 1 and 2

(3) Band 1 has longer DNA fragment than 2 and 3

(4) All the bands have equal length and charges but differ in base composition

Exercise-III ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	3	4	1	4	4	3	2	2	4	3	4	2	3	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	3	3	2	2	1	4	2	4	3	3	2	2	4	3
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	3	2	3	1	3	2	2	1	2	2	4	3	3	2	3
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	4	2	3	2	3	3	3	1	2	3	4	4	1	3	3
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	2	2	3	2	2	1	1	2	3	4	2	3	2	4	2
Question	76	77	78	79	80	81	82	83	84	85	86				
Answer	3	3	1	3	4	4	2	1	3	1	3				

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Important Notes

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